AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1 to 17. (Canceled).

18. (New) A scanning head for an optical position-measuring system, comprising:

a receiving grating including photosensitive areas adapted to scan locally intensity-modulated light of different phase position, the receiving grating including a semiconductor layer stack that includes a doped p-layer, an intrinsic i-layer and a doped n-layer;

wherein the photosensitive areas have in common a first of the two doped layers and at least a part of the intrinsic layer and are electrically separated from one another by interruptions of a second of the two doped layers.

19. (New) The scanning head according to claim 18, wherein the semiconductor layer stack is arranged on a transparent substrate having a conductive and transparent electrode, followed by bottom contacts, to provide a layer construction in the following order:

the transparent substrate;

the conductive electrode;

one of (a) the first doped layer and (b) the p-layer;

the intrinsic layer;

one of (a) the second doped layer and (b) the n-layer; and

the bottom contact.

20. (New) The scanning head according to claim 19, wherein the photosensitive areas are defined by the bottom contacts.

21. (New) The scanning head according to claim 19, further comprising a transmitting grating arranged on the substrate.

22. (New) The scanning head according to claim 21, wherein the transmitting grating is arranged in a center of an area of the receiving grating.

23. (New) The scanning head according to claim 22, wherein the transmitting grating is completely surrounded by the receiving grating.

24. (New) The scanning head according to claim 18, wherein a shape of the receiving grating approximates an ellipse having a greater diameter perpendicular to a measuring direction.

25. (New) The scanning head according to claim 21, further comprising a light source assigned to the transmitting grating.

26. (New) The scanning head according to claim 18, wherein adjacent photosensitive areas are adapted to emit signals phase-shifted by 180 degrees.

27. (New) The scanning head according to claim 26, wherein a scale division of the receiving grating corresponds to one-half of a period of an incident, locally modulated intensity pattern.

28. (New) The scanning head according to claim 18, wherein adjacent photosensitive areas are adapted to emit signals phase-shifted by 90 degrees.

29. (New) The scanning head according to claim 28, wherein a scale division of the receiving grating corresponds to one-quarter of a period of an incident, locally modulated intensity pattern.

30. (New) The scanning head according to claim 18, wherein the semiconductor layer stack is formed from amorphous silicon.

31. (New) The scanning head according to claim 18, wherein a residual thickness of the i-layer between the photosensitive areas is less than a thickness of the i-layer in the photosensitive areas.

32. (New) The scanning head according to claim 31, wherein the residual thickness of the i-layer is between 5% and 95% of the thickness of the i-layer.

33. (New) The scanning head according to claim 31, wherein the residual thickness of the i-layer is between 10% and 90% of the thickness of the i-layer.

34. (New) The scanning head according to claim 31, wherein the residual thickness of the i-layer is approximately 90% of the thickness of the i-layer.